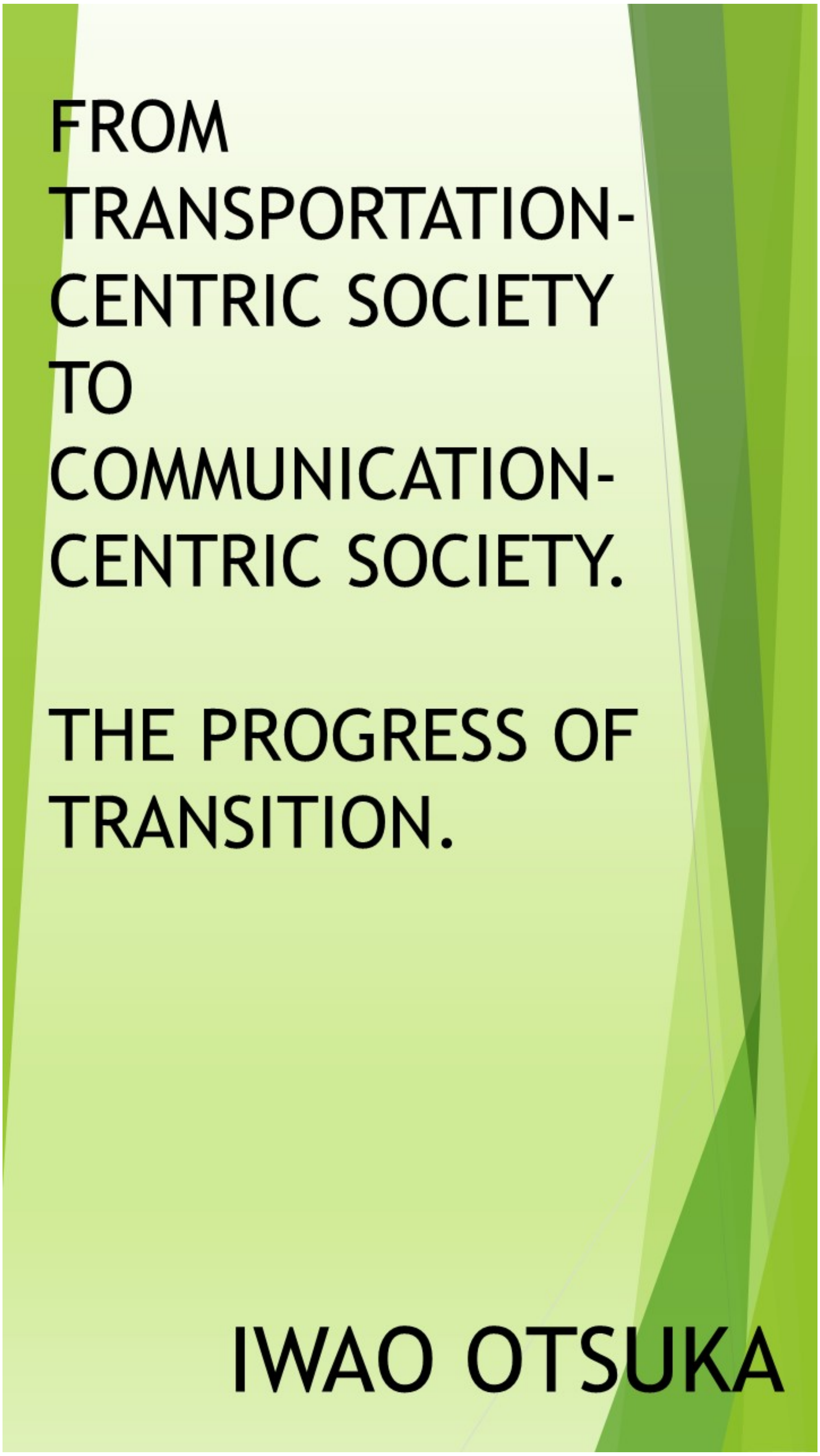
# FROM TRANSPORTATION-CENTRIC SOCIETY TO COMMUNICATION-CENTRIC SOCIETY.

# THE PROGRESS OF TRANSITION.

IWAO OTSUKA



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From transportation-centric society to communication-centric society. The Progress of Transition.

Iwao Otsuka

# Transportation and communication humans

[Overview]
Humans can be broadly classified into two types: the “transportation type” that prefers physical transportation and the “communication type” that tries to complete a certain task without physical transportation by communication. There are “mobile communication types” who have both of these characteristics.

[Text]
I think there are two main types of people in our society, “Transportation Type” and “Communication Type”.

The “transportation-oriented” people are those who like to travel around by car, train or on foot. This type of person prefers to move around in physical space, for example, for vacations in tourist spots, mountain climbing, and pilgrimages to temples and shrines.

On the other hand, the “communication type” is the type that prefers to hardly move around the physical space, using communication to get most of the things done without leaving home, for example, by using internet banking, mail order services, or working at home.

Traditionally, “communication-type” people are sometimes treated as “recluse” and pathological because they do not go out much. However, in reality, “communication types” are psychologically active in moving around.

For example, in the case of surfing the Net, one stays physically at home all the time, but while surfing the Net, the screen of one’s personal computer repeatedly connects directly to servers in various parts of the world, and in that sense, “communication-type” people who enjoy surfing the Net are not In other words, we can be said to be a traveler who travels around the world in an instant.

A “mobile communication type” person has both the characteristics of “transportation type” and “communication type” people as described above. Specifically, people who prefer to talk with others or connect to the Internet on their mobile phones while moving from place to place by public transportation or on foot.

Considered in this way, the above description suggests that

(1) “Transportation pure type”: They prefer only physical transportation and do not like communication.

(2) “Communication pure type”: Does not like physical movement and prefers communication for everything.

(3) “Mobile communication type”: Prefer both physical movement and communication.

(3) “Mobile communication type”: People who prefer both physical and communication.

In the old days, when telephones and the Internet were not widely used, there were many “transportation-minded” people. However, they often exchanged letters with remote parties by mail.

Nowadays, with the widespread use of mobile phones, the “mobile” humans in (3) may account for the largest percentage of the total. What is clear is that the total number of “communication-type” people is gradually increasing as high-speed communication lines such as optical fiber networks become more widespread. The number of “communication-type” people may be on the decline. This trend is expected to accelerate as the workforce shifts from central offices to telecommuting.

In addition, it is impossible to live “transportation only” and “communication only” under the current circumstances, and it will be necessary to combine the two in some form or another. For example, the “communication pure” people who try to get everything done by correspondence would not be possible unless there are “transportation type” people, such as couriers and postmen who physically move packages such as mail order products.

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# The Next Generation Communications Society

The Spatial Connectivity Function of Communication and Social Change
Although written as early as 1998, it anticipates the current popular theories of ubiquitous and teleworked societies.

## 1. Introduction (The Spatial Connectivity Function)

The traditional debate about the relationship between communications and society is
(1) The theory of the "information society," that is to say, one that emphasizes the aspect of what is conveyed using communication lines, or the information (content) that flows through communication lines. It points out the expansion and diversification of the amount of information flowing through communication networks, and focuses on the "information" itself flowing through communication lines (e.g., Yoshii 1996).
(2) The "broadcasting and communication media" theory, which emphasizes the usage of broadcasting and communication devices (e.g., telephones and televisions) that interface with users at both ends of the communication line (e.g., Yoshimi et al. 1992).
(3) The theory of "social communication", which emphasized the nature of communication between people (e.g., research on network communities created by PC communication) (e.g., Ikeda 1997), was the mainstream.
(e.g., [Ikeda 1997]) have been the mainstream.
This paper differs from the above-mentioned viewpoints in that the essence of communication is the combination of geographic spaces that are separated from each other, and it summarizes the changes in the nature of society as a result of the advancement of communication.
This paper does not deal specifically with the content of information flowing on communication networks. It focuses

on the fact that information flowing in real time over communication networks connects different spaces and eliminates the sense of distance between them. By connecting them to each other and to the communication lines in a complex manner, multiple people are simultaneously joined at a distance of zero. This is an important aspect of the function of communication, we believe.

Communication has a function to connect and combine physical and geographical spaces that are separated from each other, in other words, it has a function that can be called “spatial connectivity function”. In other words, no matter how distant they are from each other, once they are connected, the distance between them is not perceived at all. In other words, it can make two points that are physically separated from each other feel as if they are at the same point that is attached to each other.

The connection between two different points is created by sending a sufficient amount of information specific to each point to the other point through the line. The enhancement of the spatial connectivity function of communications is deeply linked to the development of information technology. However, past discussions on communications have focused only on the content and quantity of information flowing through the lines and have not paid much attention to the spatial linkage function.

The “spatial linkage function” of communication can be confirmed, for example, by using the telephone. When we are connected, we can hear voices from any distant location as if they were coming from right next to us (at our own ear) [Gumpert 1987]. Alternatively, in TV broadcasts, the location of the broadcast (e.g., the U.S.) and the location of the broadcast (e.g., Japan) are interconnected within the scope of audiovisual perception (each has the sense of being directly interviewed in the other’s location, thus connecting the spaces and sharing each other’s space). This can be confirmed by

In e-mail using the Internet or PC communication, the contents of the e-mail can reach the other party instantly without any sense of time or distance, so that the contents of the e-mail can be retrieved in the same way as if a person next to you handed you a memo, and the spatial linkage function of

communication can be used as a means of communication.
The next generation communication society will be one in which people are connected to each other in real time, regardless of the distance between them.
The next generation communication society is one in which individuals are connected to each other in real time regardless of the distance they are located, and in which instantaneous connections between people expand to the rest of the world.

## 2. Decrease in geographical boundaries (regional and local)

Communications has the ability to connect distant regions as different geographical spaces into one.
Any terminal connected to the network is instantly connected to another terminal, no matter how remote the terminal is geographically, as if it were “equally zero distance”. In the case of communication, the sense of connection is almost the same no matter how far apart they are (e.g., the length of time one has to wait from dialing to connecting to the other party is almost the same for a local call as for an out-of-town/international call, which is almost instantaneous), and distance has almost no effect on human psychology. No matter how far away you are, you feel as if the other person is right next to you.
It doesn’t matter what point or region you are in, once you are connected by communication, it doesn’t matter because you are all connected with the same sense of distance, close to zero. In this sense, the concept of region itself becomes meaningless. In other words, it can be said that communication has a de-regional and de-territorial function. Communication has the effect of reducing the sense of belonging to a region. As communication becomes more advanced, it becomes less important which region you live or work in. Regardless of whether one lives in an urban or rural area, once they are connected by communication, they will be able to connect and share each other’s space without any disparity and without any differences in geographic space, and both parties will be on an equal footing. Therefore, the traditional differences between

urban/rural areas and urban/suburban areas will disappear.
In other words, it can be said that up until now, people have been bound by geography, but in the future, communication will bring people together beyond geography (transcendence of geographical space).
Therefore, the way of community building is changing from the traditional transportation (walking, railroads, cars, etc.) type of community building, which is spatially constrained and relies on transportation (walking, railroads, cars, etc.), to the communication type of community building, which is spatially transcendent (i.e., linking people together in different locations, such as stations, city halls, post offices, etc.). In the future, we will see a shift to a new type of society in which interrelated facilities are connected through high-speed, wide communication lines, which will transcend geographical restrictions and can take any form of free distribution.
In addition, as human relations shift from the traditional, locally-contained model to one that is open to the outside world, the narrow regional consciousness of "oraga" villages and "oraga" towns, which are confined to a certain area, will dissolve, and a de-regional consciousness that aims for a more global, national, and global scope will emerge. In other words, the current generation, whose thinking is limited to a certain region (with a strong sense of "localness" and a narrow perspective that is driven by the interests of exclusive "locals"), will pass the baton to the next generation, whose thinking is freed from regionalism and oriented toward wide-area communications (with a broad perspective that considers the interests of the global world). .

## (Supplemental) Phone and Community Building

Today's telephone connections between people are usually one-to-one and do not support many-to-many (like computer communications and the Internet). The telephone is not suitable for doing something jointly among several people at the same time. Therefore, despite [Yoshimi 1993]'s point, is it not reasonable to see that the telephone has not contributed much to building cross-regional communities? If the same communication lines are used, many-to-many communication, such as an Internet mailing list, would be much easier to contribute to community building.

**(Supplement) Calling rate structure**

With personal computer communications and the Internet, once you connect to the nearest access point, you can connect to all regions of Japan and the world at the same price. PC and Internet users benefit most from the geographic and spatial transcendence of communications.

In contrast, existing telephones (except for mobile phones) are distance bound, meaning that the longer the distance, the more expensive it is. In other words, the longer the distance, the more expensive the call. As a result, short-distance connections are encouraged and long-distance connections are discouraged. This does not allow us to take advantage of the transcendence of geographic space, which is a feature of telecommunications. This leads to the persistence of regional characteristics.

## 3 Equalization of population distribution

The habitation of people in highly developed areas of communication does not require them to live in close proximity to each other, but they can easily meet their remote counterparts in all audiovisual aspects, freeing them from the constraints of distance and making it possible for them to disperse across Atlantis, rather than the traditional form of concentration in one place. Thus, the development of communication helps to decentralize the population in overcrowded areas.

Alternatively, communications can help to revitalize geographically distant and overpopulated areas, since any spatial separation is eliminated by instantaneous interconnection (although points that are too isolated from the outside world may not be possible due to logistical difficulties). Up to now, agriculture and forestry have been the main industries in underpopulated areas. However, with the development of communication, white collar workers (traditional office workers), remote controlled manufacturing and software manufacturing will become possible in addition to agriculture, and more and more people are expected to move to these areas. In this respect, the development of communication can help promote underdeveloped areas (e.g., by generating places to earn income and correcting industrial polarization).

Ultimately, it can be said that the development of communication helps to shift the distribution of population from an uneven geographical distribution to an even and uniform distribution.

## 4. Equalization of arbitrary points and “location freedom

The fact that no matter which point you are at, once you are joined by communication, you will be connected to any other arbitrary point anywhere in the same distance-zero sense means that communication brings about the equivalence of all points (equivalence in terms of the conditions for interacting with others). The equivalence of the relationship that any point has to any other point means that it is the same and free no matter which point it is at. In this sense, communication brings about the liberation (freedom) of people from the geographical location in which they exist. This phenomenon could be named “positional freedom” (being free from the geographical position one is in), following M. Weber’s concept of “value freedom” (social science must be free from value judgments in order to remain objective in its perceptions).

The concept of “freedom of location” is seen, for example, in the fact that a mobile phone caller can communicate with another person without knowing the name of the place where he or she is, or where the other person is located. On the other hand, the exchange of letters by mail is not “location free” because one must always be aware of one’s address (information on where one is) and the other party’s address on postcards and envelopes. This is because if your current location is not identified, you cannot receive mail.

With the spread of mobile phones, it can be said that the tendency to be able to be combined with any other point with the same sensation at any point without being conscious of where you are at the moment (“freedom of location” in sensory sense) has been strengthened further. In terms of communication costs, as with PC communication and the Internet, as long as you connect to the nearest (local) access point, you can connect to the whole country and the world at the same rate (local call charges and provider connection charges), which means that you do not have to choose where you are, or you are not tied to your current location. apart, meaning that it is free to have a binding relationship with any other point on the same terms in terms of cost (“location freedom” in terms of cost).

## 5. the universalization of any point.

The development of communication allows information emanating from a point to be accessed simultaneously from any point in the country to the whole world. For example, information on the World Wide Web home page registered by users in the region with a local Internet provider can be accessed instantly from anywhere in the world.

Considering the above in reverse, the sophistication of communication encourages the possibility that information specific to any point in the country (the whole world) can be spread to the whole country (the whole world) in an instant (universalization of any point). In this respect, we can expect to see the universalization of cultures that were previously limited to a single region or area to occur easily on a national level, and cultures that have until now been limited to each region to meet, compete and select each other.

Furthermore, in the next stage, the individuals who create culture will be able to go directly to the whole country, without going through the traditional primary filter of local and regional acceptance, and will be able to produce their own culture and skills…. In one fell swoop, people will be able to spread things like The dissemination of information on the World Wide Web on the Internet for individuals, regardless of their region or nationality, is a good example of this trend. In this sense, the localized nature of information is on its way to extinction. 6.

## 6. The omnipresence of the central city

In the state of advanced communication, as described below, we can expect to see a phenomenon called “the omnipresence of the center (city center)” (a state in which any point can instantly become the center (city center)).

With an advanced communication network in place, we can immediately and directly access the geographical center of the city wherever we are. In this case, the point of access origin is directly connected to the center at the time of access, so that the point of access origin equals the center of the access destination in terms of centrality (city center), and as a result, all the points of access origin become centralized.

As a result, all the access points are made centralized. This is similar to the way geographic space can be transcended in a PC communication with a centralized host function. However, there is no difference from the case of geographic distribution of the central region (city center) in that it is necessary to distribute high speed lines to all regions outside the central region (city center), and there are no advantages. In fact, there is a strong disadvantage in terms of security (if the center of the city is damaged, all the others will be destroyed).

A new idea is to have the center of the city geographically decentralized while linking them with each other via communication lines. In other words, multiple points connected to each other by communication lines with a sense of zero distance are connected to other multiple points with a sense of zero distance through the mediation of communication lines connected to them. As a result, it becomes impossible to tell which is the center and which is the region, and the degree to which all points are equally central (the omnipresence of the center) increases. An arbitrary point can instantly become the center (the center, the city center) by having the possibility of being instantly connected to all other points connected by a line.

This solves the security problem of central (city center) functions. The ability to instantly take over central functions at any point prevents the central government and corporate headquarters from being paralyzed by an earthquake or war.

In any case, the omnipresence of the center of the country through the use of communications will bring about a regional (spatial) fusion between the central and local governments. Or, it eliminates the disparity and conflict between central and local regions. Alternatively, it also eliminates the disparity between the regions. All regions can be on an equal footing without feeling any geographical disadvantage.

As communications become more sophisticated, the various institutions that have traditionally been located in geographical centers (urban centers) will no longer need to be in the center of the city. Thanks to its ability to transcend space, any point can be centralized (by ensuring immediate accessibility to it), allowing institutions to be built wherever they want, without regard to location (although in practice, some logistical constraints need to be taken into account). In fact, even if research institutes are located in places where transportation is not necessarily convenient, they seem to be able to produce research results without feeling the geographical disadvantage by connecting to the rest of the world through high-speed communication lines.

If the workers of public and private institutions, which have been located in central locations (urban centers), are dispersed to distant and disparate locations and communicate with each other through high-speed communication lines, the substance of the institutions will be established in the form of dispersed workers at their locations, and the buildings and other facilities owned by the institutions themselves will become more accessible to the public. It will be better if we no longer have them. In this sense, institutions such as government offices and corporate entities do not even need to exist in tangible form.

In the end, the development of communication encourages the equating of the centrality of different points (the degree to which they are urban centers). The characteristics of communication, which allow us to act as if we are right next to each other no matter where we are (which is the same distance), and the sophistication of communication (e.g., the use of multi-media) dissolve the traditional structure of regional conflicts and regional stratification, in which the center and the regions are opposed to each other.

## 7. the omnipresence of nations

The omnipresence of the center, when considered at the national level, means a polynuclear decentralization (omnipresence) of capital functions (state functions). The center of the state will appear before the people as if it were equidistant from every corner of the country, instead of being concentrated in a specific capital city as it is today.

As communications become more sophisticated, administrative offices, which should be located at the center of society, will no longer have to be built in a centralized location that is geographically considered to be the center of the country. If they were set up separately in different regions and connected by high speed lines between them, a central government would be created as a unified entity that transcends geographical space. As long as each person (not a building) performs the functions of a capital city, it can function as a capital city no matter where the people are located as long as they are connected to each other by lines.

The decentralization of national functions through the use of communication encourages the equalization of local and central functions. People in the countryside can enjoy the same advantages in life as they have in the center (and vice versa). The boundaries between local and central are blurred, and the concept of local autonomy (and, on the flip side, centralization) disappears.

The disappearance of the distinction between regions and the center (i.e., the disappearance of “provincialism” and the equal standing of regions and the center) means that the significance of the existence of local governments, which have traditionally represented policies confined to a certain region, will diminish. The significance of regional confinement will diminish as any region will be able to access any other region from an equidistant perspective. In the future, we will see a shift from the current generation, whose thinking is confined to the region and dedicated to “local” interests, to a broader networked generation freed from the constraints of the region, and this will lead to the spontaneous formation of a broader policy group with different values that transcends regions and localities, united by the same values. The emergence and juxtaposition of these parties would overturn the traditional idea of political parties being trapped in the interests of the regions from which they originate.

The omnipresence of the state will force a fundamental rethinking of the conventional theory of relocation, which is based on the premise of a centralized geographical concentration of capital functions. This is because the function of the capital city can be decentralized over a wide area through the transcendence of geographical space through communication. The use of communications is more effective than transportation in decentralizing the functions of the capital city. It is more effective than transportation in dispersing the functions of the capital city, because it can connect people even at a distance in an instant. The use of communications makes it possible to decentralize functions to more distant locations.

## 8. optimization of residence and work location

The development of communications supports the individual’s optimal location of residence or work.

The fact that any point can immediately become a central location means that, from the standpoint of the communications infrastructure, living in any point will provide an almost identical advanced communications environment (e.g., the Internet). No matter where you live, you can access any other location as if it were equidistant (zero distance), and you are free to choose any location to live and work there.

This means, in other words, that in a state of advanced communication, people will be able to continue to live in the geographical location that they think is best for them.

People would no longer have to live near a major city, for example because of commuting times, as they do now. If they are transferred, they will simply change their communications to the new place of work and will not have to change their residence or place of work themselves. Once you've settled in a place you like, you can live there forever. As the criteria for deciding where to live have changed significantly from, for example, being convenient to commute to work, we may see a shift in population, with many people choosing to live in small towns away from large cities as long as there is better welfare for the residents. .

Alternatively, the use of mobile technology will allow people to live a life on the move that is comparable to that of a sedentary one, as they can constantly maintain the same advanced communication environment while geographically moving. This will allow workers to move freely and seasonally, like migratory birds, to work where it is warm when it is cold, cool when it is hot, etc. Mobile offices could be housed in campervans or mobile hospices (collective housing for mobile workers).

## 9. immobilization of life

With the development of communications, we can expect to see a shift from a dynamic society (a society in which people move in geographic space) to a static society (a society in which people stay still in one place in geographic space). With the advent of a communications-centric society, it is expected that people will sit in front of communication terminals and not move for long periods of time (similar to sitting in front of the TV all day). This is the phenomenon known as "net surfing", which allows people to stay in the same place (e.g., in front of a computer desk) and connect to various locations instantaneously and effortlessly by manipulating communication terminals.

A state in which the body stays still for a long time is not a pathological phenomenon. Even conventionally, in trains and automobiles, we move spatially, but the people inside sit still in their seats (or do not move standing still). The vehicle itself may move, but it is the same as communication in that the person inside does not sit still and move. As for white-collar workers (general office workers), they often sit at their desks and don't move while working. Therefore, the immobility of people's bodies exists enough in the present situation, and even if we say that people will be immobilized with the advent of a communication-centered society, it does not mean that their life patterns will change at all (therefore, the transition to a communication-centered society should go smoothly). It will be more thorough than at present.

## 10. in conclusion (limitations of communication and the need for transportation)

In order to determine the future development of communications, it is necessary to determine what can and cannot be substituted by communications for traditional transportation-based communication.
In order to solve this problem, it is not necessary to consider the conventional alternatives to transportation by communication (e.g., [Suzuki 1992]), but rather to list the cases in which people try to communicate by transportation (by moving their physical bodies in space) without using communication. This is necessary.
In doing so, we should not pay attention to economic factors such as the high cost of using telecommunication lines (because this is a problem that will be cleared up eventually as telecommunication develops).
In cases where the communications that are currently possible are not sufficient, we must consider the following
(1) When a person-to-person encounter involves the simultaneous movement of goods (logistics), such as the handing over of physical materials such as electronic components at a meeting
(2) It is conceivable that there may be cases, such as banquets and meals, where there is a need to share senses of touch, smell, etc., other than the audiovisual senses supported by modern communications.
Related to the above issues, it is conceivable that the response to the advanced communications society will advance for

white collar (clerical workers) and lag behind for blue collar (industrial workers). On the other hand, blue-collar workers (e.g., auto mechanics) are mainly involved in handling concrete objects, and they have to deal with a wide range of goods and This is because the machines used to handle the supplies cannot be put on the communication lines. Blue-collar workers would still have to travel to the site (the point where supplies and machinery are located) as they have in the past, even with the advancements in communications.

In order for blue collar workers to benefit from the benefits of communications, they need to be able to remotely control machinery and supplies online, which requires a mechanism like the remote control of communication satellite robots. Note that even blue-collar software producers can benefit from communications, with the exception of software producers. This is because they can acquire (e.g., remotely log in to a remote workstation through a telephone line to create a program) and distribute (e.g., distribute a program via the Internet or PC communication) the means of production and products online.

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## (Addendum) Why progress on the above has not been successful.

2008.08

Ten years have passed since I wrote the above article, but the reality of Japanese society seems to be the same as it has always been, or rather, it is going against the grain.

The possible causes are summarized below.

Personally, I think that the conditions for employees working in companies to be able to move freely to any location without being physically located in one place are much better now than they were before, thanks to the widespread use of the optical internet.

However, companies do not like their employees to work freely outside the office because of information leakage measures and security issues. For example, if you are working with your PC open on the bullet train, the person next to you could see your screen, and your trade secrets could be leaked.

The other problem is the counting of working hours. In order for the company to count the working hours, the best way to manage the working hours would be to have employees arrive at the office by a certain time, work there, and be clocked out, which has been done for a long time. As long as companies continue the practice of paying salaries on an hourly basis, this problem is unlikely to go away.

The other reason for this may be that it is considered to be the quickest way to monitor whether employees are doing their jobs properly by gathering them in one place in the office and monitoring them directly in real time. Personally, I don’t see any difference in the accuracy of surveillance between video conferencing and video surveillance, but I also think that companies want to keep the possibility of direct physical guidance and sanctions on their employees.

Moreover, this may be peculiar to Japanese and other East Asian societies that prefer group behavior, but there seems to be a tendency to dislike individual behavior and prefer to stay together in a group as much as possible. However, there is a tendency to dislike the individual activities of employees, preferring to work together as a group.

Another problem is how to calculate and pay for the costs of creating, maintaining, and communicating at home and other work spaces for employees who do not come to work. This calculation standard is not clear at the moment, is it not? In some cases, employees may decide to extend and renovate their homes to make room for office space at home, and the question of who will bear the cost and to what extent is involved. As a result, companies may be hesitant to optimize their residential and work locations.

But for now, if we don’t create rooms for workers to work in, telecommuting will not progress.

One solution to this problem is to prepare or rent a unit workroom or unit office room that can be assembled and disassembled and built into existing houses as a capsule, like a unit bath.

Alternatively, such work or office rooms could be built into suburban housing estates, condominiums, and single-family homes from the start.

Alternatively, you could build a large number of small, one-room office rooms for individuals that could be used as part of a simple home, just like the private rooms in an Internet cafe, in the vicinity of suburban homes, and make it easy for anyone to rent them as needed.

From the point of view of the traditional closed, sedentary society that is so strong in Japan’s rural areas and big cities, the arrival of dubious strangers could cause a campaign of exclusion, and in this respect, it is necessary to consider how to make the system more acceptable.

## (Addendum) The reason why the above progress is starting to work

2020.10

The above-mentioned “communications-centric society” of society is progressing at once, with the global outbreak of the new coronavirus from the beginning of 2020, when rushes to work and densely packed offices of humans are thoroughly avoided. This year will be remembered historically as a critical turning point from a “transportation-centric society” to a “communications-centric society”. My prediction turned out to be correct after all. It has become the norm for people to communicate with each other via the Internet in their home offices. Or, there is a growing trend to build a virtual office on the net on a cloud basis. Traditional commuter office work, when not accompanied by materials, will be rapidly eradicated by home offices and remote offices. Transportation, such as railroads, will shift from being passenger-centric to being logistics-centric. The suburban stations will become the hub of remote offices.

## On the development of nuclear offices

In a highly developed state of communication, any space can be reached from any space without any equidistance, or more precisely, without any sense of distance from each other. When each space is made independent and connected to each other through communication lines, these spaces, no matter how distant they are from each other, are perceived as if they were a single entity due to the connecting effect of communication. When this is applied to the office, it means that even if each department and each person’s seat is randomly distributed in the office, the office can maintain cohesion through communication.

In the past, most communication methods in offices have been through the telephone. While the telephone only supported one-to-one communication, in recent years, computer-based data communication has come to support many-to-many communication, making it much easier to maintain organizational cohesion even when people are separated from each other. With this, the decentralization of offices in the form of satellite offices, the introduction of telework, and the gradual development of small independent offices expressed in the term SOHO (Small Office, Home Office).

The traditional structure of the distributed office was that first of all there was a head office where a large number of organizational members gathered together, and then there was a satellite office for each individual or small group in the form of subordinate to it. In other words, the satellite offices were based on the premise of the head office. In this case, the non-ubiquity of the central functions of the office (in geographical space) remained. In other words, the main members of the office had to commute together to the same point where the head office was located, and they had to be collectively bound to the spatial location of the head office.

In addition, small-scale freestanding SOHOs were only introduced to small, independent, privately owned companies, etc., while large government and corporate organizations usually stayed with the traditional large-scale, non-independent offices where many people shared the same vast space. Large non-independent offices require workers to share the same geographic location, which is accompanied by geographical space limitations.

The offices of future large-scale governmental and corporate organizations will be what we might call “nuclear offices,” individual offices that are self-sufficient, each with its own minimum unit, linked together in clusters by high-speed communication networks, so that they can be freely assembled, free from the limitations of geographic space. It is thought to be possible. Even if small offices are separated from each other, they will be connected to each other by the “spatial connectivity function” of communication to create a single network organization.

In other words, as communication networks become more sophisticated, the head office is broken down into clusters of disparate private offices for one person and emerges as a collection of “core offices” as the smallest unit that can exist independently as an office. This “nuclearized” state, in which the functions of the office have been reduced to the extreme and only the essential functions have been extracted, can be called the office minimum (the state of being equipped with the minimum functions necessary for the establishment of an office).

In the nuclear office, each person is kept in a private room and spatially cut off from the outside world, but communication lines enable them to communicate with any other private room and maintain openness of communication to the outside world.

The decomposition of the head office into a nuclear office is

(1) Individualizing the office and making office functions independent; (2)

(2) Spatially decentralized and disjointed office locations; and

The procedure is thought to be the following.

In the state where the head office has disappeared, the organization is assembled by assembling nuclear offices that are independent of each other, each of which consists of a single, disparate individual space. The organization is established by freely connecting cells located at arbitrary points called nuclear offices with each other through communication lines. Each office assigned to each individual is self-contained (able to stand on its own by itself).

The advantages of the nuclear office are

(1) It enables those who are located at a distance from each other to be integrated on a single, cohesive organizational communication channel, allowing them to create, modify and maintain their organizations in a way that is independent of geographic space, making them geographically ubiquitous. The nuclear office is, in that respect, an important key to realizing the omnipresence of the center and of the nation as described above.

(2) Because a network of nuclear offices makes it possible to create an office system that can be adapted to any form of organization. (3) The geographical and spatial location of the offices where each person in the organization works can be replaced without changing the location of the office, thus allowing freedom of organizational change (easy consolidation and elimination, no need for relocation work associated with organizational change, and no cost of organizational restructuring).

These are some possible points.

The background to the emergence and spread of the nuclear office, in addition to the development of telecommunications, is that

(1) Firstly, there is a growing awareness of the need to ensure individual privacy and the resulting increase in the individualization of rooms in existing houses (nucleation), and secondly, the increase in the degree of independence that comes with partitioning individual office spaces. Alternatively.
(2) The tendency for each person to choose a work location that is not geographically constrained, in which case the location they want to work in will differ for each individual (as each individual will have his or her own personality), which will result in a different work location for each person.
The (minimum) functions that a nuclear office should be equipped with are
(1) Work (ensuring that there is a place to produce and create social functions, to learn, think and make decisions)
(2) Communications (e.g., ensuring communication with other core offices, computer WAN facilities, etc.)
(3) Housing (ensuring comfort, air conditioning and hot water heating facilities, etc.)
It is considered to be in the vicinity.
The equipment needed for the core office is likely to be essentially the same as that needed for a traditional satellite office. Each person will need to have one device, such as a printer, that was shared by several people in a traditional office. For the spread of the nuclear office, the office equipment needs to become smaller and more personalized.
There are three possible forms of decentralization that can be tailored to the needs of employees in a nuclear office: (1) Telecommuting
(1) Telecommuting: Attaching office functions to each household in a residence (e.g., company housing) where workers currently live. One or several rooms are converted to offices.
(2) Telecommuting: Collective capsule style offices are used. Buildings consisting of a collection of private offices will be erected in the vicinity of the residences. These buildings are to be located within a few minutes' commute from home, and each office room is to be completely independent and locked as a private room. Each room is individually contracted with a company or government agency.
The above offices are permanent offices and cannot be moved

because their location is fixed. Workers had to commute there (or stay there if they were at home). The mobile office enables workers to change their office location flexibly by (a) making office equipment small and portable and (b) making the living space of the office mobile.

In a mobile office, (a) it is conceivable to always carry the necessary props for building an office (e.g., a laptop with built-in camera and telephone functions) with you at all times, so that you can build a one-person core office with a single touch on the road (on the road). Information outlets could be set up all over town (e.g. coffee shops) or mobile phones could be used to communicate with other offices from any location. As for (b), like a car office, a printer and facsimile machine could be installed in the car so that a nuclear office would follow the driver wherever he or she went.

The organization with the most freedom in terms of time and space is the one where each person has a separate mobile nuclear office and a combination of those mobile nuclear offices.

The nuclear office is used by the workers, but if a similar environment is built and used by the students and instructors of the school, it becomes a “nuclear learning room and laboratory”. By having a learning office/study room where each person can be independent and spatially separated from each other, the students/instructors will be able to bring people who are suitable for learning by attainment and collaborating with each other who are geographically separated from each other, instead of having to meet in one communal location for a set amount of time, as was previously the case with students/instructors who had to meet in one communal location. It can be tied together and installed in an extremely flexible manner.

The challenge for the nuclear office is to find a way to eliminate the loneliness of being alone in the office while at the same time maintaining the privacy of the users in the office, which are two contradictory requirements. In particular, it is necessary to think about how to adapt the Japanese corporate organization to fit in with the conventional approach of having many people living together in a large room. One possible measure is to allow people to observe each other’s coworkers in different offices at the same time using a farsightedness tool.

(c) 1998.2 First published in 1998

## Telework and nuclear office and home office as an infection control measure

The home office is a kind of nuclear office, a place where people live their daily life as a home office.

This home office is a place where self-employed people, such as town doctors, actually build and live, and it is possible to pursue the ideal image of the home office from existing examples.

For example, it is conceivable that the houses built and lived in by self-employed people may already have some innovations on how to watch over and take care of unproductive and caring family members such as children and the elderly.

For example, in order to evacuate from the rapid spread of a global infectious disease such as a new coronavirus, people who have been living in a segregated occupation system suddenly need to live in a segregated occupation system, and this has led to the remodeling of homes designed and built for segregation of occupations into segregated occupation systems, or to the development of a new system of segregated homes. The urgent question is whether a little remodeling and redecoration will make the home more suitable for a fusion of work and home life.

In other words, within a short period of time after the government requested that people be placed on standby at home, people who have been out of their homes and commuting to work or school on foot, by train or bus will be able to access the Internet or high-speed mobile connections to their apartments or other locations, and they will be able to access the Internet through computers with cameras and microphones. The device connects to a highly secure internal network at the company or school where the family has been commuting to work or school, allowing them to create, process, and pay for documents, notes, and presentations online, study online materials, or study in real time. online meetings with cameras and microphones, and participating in online classes with other people in the same company or other instructors, students, and students in the same school to communicate, exchange information, and receive necessary instruction via the Internet, just as rapidly as they would face-to-face with other people in the same company or other instructors, students, and students in the same school. It has become the norm.

This means that the use of the home as an office for work and study purposes as it is has rapidly turned into the norm for working people as well as the self-employed.

In this case, because, as it is, all of what goes on in the home will be available to the company where they work and the school where they go to school, it is necessary to somehow divide the home into a private zone where family secrets are kept, and a quasi-public zone in the home where secrets can be disclosed to the company where they work and the school they attend.

In addition, it will be necessary to interrupt online work and study as appropriate to take care of children and elderly people who need to be taken care of, so that they do not interfere too much with online work and study at home. In this regard, because the traditional approach of receiving hourly wages for coming to work at the office or ensuring a certain amount of study time at the school does not work, we are shifting away from such time-based evaluations, which do not focus on work and study time per se, and instead focus on how much work has been completed by a given date and Alternatively, there will be a rapid shift in work and learning assessment to a progress-based, performance-based approach to assessing how much learning has been done.

Currently, it is still a trial-and-error process for existing commuters as they are rapidly required to perform the same tasks at home as they do on their way to and from work to school in order to isolate each individual from infectious diseases.

We need to quickly establish an ideal vision of how people can work from their home offices with high-speed external network connections, referring to the lives of self-employed people, such as doctors, farmers, home factory owners, and professionals, who have been able to do all the necessary work from home.

In this case, the working and learning environment may be better or worse when converted to a home office, depending on the state of the target family.

If the family is disintegrating, if there is abuse in the home, if the family is too poor to prepare enough food at home, or if there are too many people in need of care at home, the home office unfortunately does not function well as an efficient and effective place to work and learn. On the other hand, taking a train or bus with fewer trains or buses to go to work or school is likely to lead to the spread of infectious diseases.

What we can do is to set up a nuclear office with facilities similar to a private study room in a public library, in a vacant station building or in a room in an old housing complex that is no longer being used, at a location that is far from home but not too far away, where transportation is convenient, and where there are no needless crowds. It could be remodeled and networked to provide a large amount of space. People who are unable to use their homes as an office for some reason can go to such satellite core offices, where they can work and study at their own pace without being cheated by anyone else. Such facilities need to be equipped with toilets, kitchens and shower rooms just like the home office, since we are living organisms.

Teleworkers use audio conferencing, video conferencing, or web-based chat rooms. It involves uploading presentation and learning materials to the network cloud and sharing them with attendees.

In the event of a pandemic of a highly infectious pathogen with strong interpersonal infectivity, it is necessary to ensure both the physical isolation of workers and communication, communication and decision-making among workers via the Internet and other networks to prevent infection.

This means that it is necessary to achieve a significant level of collaboration between workers, where each worker is individually isolated in a separate capsule and protected from infection by pathogens, while still allowing them to work together as they have done up to now.

Physical devices, parts, or even flesh-and-blood entities such as patients, which have traditionally been difficult to achieve with telework, can be made to exist in one place, and then projected onto video cameras, smartphone cameras, action cameras, etc., and the images can be observed and verified from different perspectives in real time, such as space satellites and Remote control of distant objects in the remote areas of the world has become easier due to significant improvements in technology and faster network speed, which is also facilitating the shift from traditional commuting to work and study to telework.

In cases where physical transportation by humans is necessary, private cars, motorbikes and bicycles, which can be used by individuals, are the main means of transportation, rather than public transportation where many people ride together at the same time and the probability of infection with pathogens is high. Alternatively, the development of individual space quarantine services in the car for each passenger, which have the same functions as private rooms on public transport, will provide some level of security even if the infection spreads.

(c) 2020.3 First published.

# The Development of Telework and Changes in Transportation and Logistics

For the survival of the core office, the home office as a type of office, regular home delivery of daily necessities, goods, materials and devices, using logistics, is essential.

Alternatively, shopping for daily necessities in one’s spare time is essential. In this respect, there is one aspect of traffic that will not disappear, but rather become more active.

In this case, as a major turning point, transportation will shift from being led by passenger movement to being led by logistics and freight movement, due to the increasing use of nuclear offices.

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  - 6. The omnipresence of the central city
  - 7. the omnipresence of nations
  - 8. optimization of residence and work location
  - 9. immobilization of life
  - 10. in conclusion (limitations of communication and the need for transportation)
  - [References]
  - (Addendum) Why progress on the above has not been successful.
  - (Addendum) The reason why the above progress is starting to work
- On the development of nuclear offices
- Telework and nuclear office and home office as an infection control measure
- The Development of Telework and Changes in Transportation and Logistics
- Related information about my books.
  - All the books I’ve written. A list of them.
  - The contents of my books. The process of automated translation of them.